

U.S. Patent Application Serial No. 09/864,862
Reply to Office Action dated August 30, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-4. (Cancelled)

5. (Previously Presented) A method according to claim 2, comprising the further step of shielding selected surfaces in the chamber from direct exposure to microwaves.

6-7. (Cancelled)

8. (Previously Presented) A method according to claim 5, wherein the chamber includes a sensor taking the temperature measurements with arc inhibiting surfaces and a stirrer with arc inhibiting surfaces.

9. (Previously Presented) A method of lyophilizing material, comprising the steps of:
placing material to be processed in a chamber under temperature and pressure conditions facilitating lyophilization;

creating a microwave field in the chamber;

taking temperature measurements in the chamber;

controlling microwave power and duration to vary microwave field strength in response to temperature measurements;

passing water vapor from the material being dried to or through a desiccant.

10-11. (Cancelled)

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12. (Previously Presented) A method according to claim 9, further comprising providing selected surfaces in the chamber with arc inhibiting surfaces.
13. (Previously Presented) A method according to claim 9, further comprising providing a stirrer with arc inhibiting surfaces.
14. (Cancelled)
15. (New) A method of freeze drying material, comprising the steps of:
 - placing material to be processed in a chamber and varying temperature and pressure conditions to facilitate sublimation;
 - creating a microwave field in the chamber;
 - shielding selected surfaces in the chamber from direct exposure to microwaves;
 - providing a stirrer with arc inhibiting surfaces and stirring the microwaves in the field with a stirrer having arc inhibiting surfaces to facilitate improved microwave dispersion in the chamber;
 - sensing corona discharges in the chamber to detect corona discharges;
 - controlling microwave power and duration to vary microwave field strength in response to detected corona discharges and coordinating with pressure to decrease the occurrence of corona discharges;
 - trapping water vapor extracted from the material being dried.

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16. (New) A method according to claim 15, wherein the step of trapping water vapor comprises passing the water vapor through a condenser.
17. (New) A method according to claim 15, wherein the step of trapping water vapor comprises passing the water vapor to or through a desiccant.
18. (New) A method according to claim 15, wherein the microwave field is created by a plurality of microwave generators selectively arranged to direct microwaves at all of the material to be freeze dried in the chamber.
19. (New) A method according to claim 18, wherein a corona discharge detection and control system is linked to the plurality of microwave generators for selectively varying power to each of the microwave generators.
20. (New) A method according to claim 15, wherein sensing corona discharges is performed by temperature sensors exterior of the microwave field.
21. (New) A method according to claim 15, wherein sensing corona discharges is performed by sensors comprising photo detectors.